

REMARKS

1. In response to the Office Action mailed August 29, 2005, Applicants respectfully request reconsideration. Claims 1-7 and 9-20 were last presented in the application. In the outstanding Office Action, all claims are rejected. In the above Amendments all claims have been amended, claims 68-76 have been added and no claims were deleted. Thus, upon entry of this paper, amended claims 1-7 and 9-20 and new claims 68-76 will be pending in this application. Of these 29 claims, three (3) claims (claims 1, 68 and 71) are independent. Based on the above Amendments and following Remarks, Applicants respectfully request that all outstanding objections and rejections be reconsidered, and that they be withdrawn.

Claim Amendments

2. By the foregoing Amendments, Applicant has amended the claims to make the claims more readable. Applicant submits that the above Amendments do not narrow the scope of the claims and have not been made to overcome or accommodate any objection or rejection. Applicant further submits that no new matter has been added.

3. New claims 68-76 have been added to further claim embodiments of the present invention.

Art of Record

4. Applicants acknowledge the receipt of form PTO-892 listing additional references identified by the Examiner.

5. Applicants thank the Examiner for the return of PTO-1449 forms filed by Applicants on February 13, 2004, and July 13, 2005, which has been initialed by the Examiner indicating consideration of the references cited therein.

Claim Rejections Under 35 U.S.C. 103(a)

6. Claims 1-4, 6, 7, 9, 10, 13, 14, 17, 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,047,074 to Zoels et al. (hereinafter, "Zoels") in view of European Patent Application 0548 580 A1 to Tibbetts et al. (hereinafter, "Tibbetts") in further view of U.S. Patent No. 5,884,260 to Leonhard (hereinafter, "Leonhard") and U.S. Patent No. 5,933,805 to Boss et al. (hereinafter,

“Boss”). Claim 5 is also rejected under 35 U.S.C. §103(a) as being unpatentable over Zoels in view of Tibbetts, Leonard and Boss, and in further view of Using Speech Recognition, by Markowitz (hereinafter, “Markowitz”). Similarly, claims 11, 12, and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zoels in view of Tibbetts, Leonard and Boss, and in further view of well know prior art. Furthermore, claims 16 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zoels in view of Tibbetts, Leonard and Boss, and in further view of U.S. Patent No. 5,608,803 to Magotra et al. (hereinafter, “Magotra”).

7. Specifically, Examiner asserts that Zoels substantially teaches the claimed elements of independent claim 1, including “at least one acoustic sensor configured to sense an acoustic signal and configured to convert said acoustic signal into an electrical audio signal, an electronic signal processing unit configured to process and amplify said electrical audio signal . . . an actuator arrangement configured to provide output stimulation and ...comprising at least dual output stimulators, wherein said output stimulators are at least one extracochlear electroacoustic, electromechanical, or purely electric stimulator, and at least an additional electroacoustic, electromechanical, or purely electric stimulator.” (See, Applicants’ claim 1, above; Office Action, page 3.) Examiner acknowledges that Zoels fails to teach or suggest “an actuator arrangement configured for positioning in a single external auditory passage.” Instead, the Examiner relies upon Tibbetts for the assertion that this concept was well know in the art. (See, Office Action, page 3.)

8. Furthermore, Examiner acknowledges that Zoels also fails to teach or suggest a “signal processing unit including, a speech analysis and recognition module, ... and a speech synthesis module configured to facilitate the transmission of speech information in a noisy environment,” as recited in Applicants’ claim 1. Instead, Examiner relies upon Leonhard for the assertion that these features were well known in the art. (See, Office Action, page 4.)

9. Examiner further acknowledges that both Zoels and Leonhard fail to teach or suggest the elements recited in Applicants’ claim 1 of “an electronic signal processing unit configured to process and amplify said electrical audio signal, said signal processing unit including, a speech analysis and recognition module, wherein said speech analysis and recognition module are arranged to detect and extract additional prosody of the speech

information, and ... said speech synthesis module is arranged to take into account the prosody of speech information in speech synthesis” (See, Office Action, page 4.) Although Examiner’s primary two references fail to teach or suggest this element of claim 1, Examiner asserts this element was well know in the art, as taught by Boss. (See, Office Action, page 4.)

10. The Examiner then asserts that “it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Zoels in view of Leonhard by specifically providing the features, as taught by Boss, since it is well known in the art for the purpose of improving the quality of the synthesized speech for hearing impaired individuals.” (See, Office Action, page 5.) Applicants respectfully disagree with the Examiner’s assertions and respectfully traverse this rejection.

11. The proposed combination of Zoels with the teachings of Tibbetts, Leonhard and Boss is improper because there is no teaching or suggestion in the art of record that Zoels be modified, much less that it be modified in the manner proposed by the Examiner. Furthermore, even if Zoels were modified in the manner proposed by the Examiner, the resulting device would not contain all elements of Applicants’ independent claim 1. Specifically, Zoels, Tibbetts, Leonhard, and Boss all fail to teach or suggest that which is relied upon by the Examiner.

The Examiner Has Relied Upon Impermissible Hindsight

12. The Examiner has failed to demonstrate that it would have been obvious to one of ordinary skill in the art to modify the teachings of Zoels in view of Tibbetts, in further view of Leonhard and Boss. First, Examiner incorrectly asserts that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zoels by specifically providing the transducer, as taught by Tibbetts, because it is well known in the art at the time of the invention for the purpose of allowing deeper insertion into the ear canal and hence better transmission of sound.” (See, Office Action, page 4.) However, Zoels is directed to an electroacoustic hearing aid system for tinnitus therapy. (See, Zoels, Abstract, col. 2, lns. 1-35.) Similarly, Tibbetts is directed to “[a]n in-the-ear electroacoustic transducer ... constructed to limit the effect of accretion of cerumen on acoustically active surfaces: to prevent cerumen from plugging passages for acoustical energy to the tympanic membrane.” (See, Tibbetts, Abstract.) There is no suggestion in

Zoels, Tibbetts or the other art of record that Zoels has a need for a different construction “to prevent cerumen from plugging passages for acoustical energy” as disclosed in Tibbetts. In fact, Zoels completely fails to note that cerumen has any impact on the design at all.

13. Similarly, there is no teaching or suggestion in the art of record to support the assertion that there is a need for deeper insertion of the hearing aid device in Zoels. Both Zoels and Tibbetts fail to teach or suggest that improved transmission would result from a more deeply inserted device. Therefore, for at least these reasons the Applicants respectfully assert that the rejection under section 103 was improper and should be withdrawn.

14. Furthermore, the Examiner’s assertion that “it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Zoels by specifically providing that algorithmic features, as taught by Leonhard, for the purpose of improving the quality of the speech signal generated” is equally unconvincing. (*See*, Office Action, page 4.) There is no motivation in the art of record to combine the noise suppression features of Leonhard the system of Zoels because Zoels teaches away from the principles of noise reduction. (*See*, Zoels, col. 2, lns. 35-54.) As noted above, Zoels is directed to a hearing aid system that generates “tinnitus therapy signals with the signal processor” to mask tinnitus. (*See*, Zoels, col. 2, lns. 1-35.) Zoels accomplishes this masking by creating broadband and narrowband noise. (*See*, Zoels, col. 2, lns. 35-54.) Thus, because the system of Zoels necessarily operates in a system created noisy environment, there is no need to combine the noise suppression techniques of Leonhard with Zoels.

15. Also, Zoels notes “[a] person with normal hearing can employ the digital hearing aid as a communication device that ... reduces the unwanted noises present in the useful signal.” (*See*, Zoels, col. 4, lns. 33-38.) Thus, because Zoels already contains a means of reducing noise in the system, there is no need to incorporate the noise reduction means of Leonhard. Therefore, for at least these reasons, Applicants assert that the rejection under section 103 was improper and should be withdrawn.

16. Moreover, as noted above, Examiner acknowledges that Zoels and Leonhard fail to teach or suggest the elements recited in Applicants’ claim 1 of “an electronic signal processing unit configured to process and amplify said electrical audio signal, said signal

processing unit including, a speech analysis and recognition module, wherein said speech analysis and recognition module are arranged to detect and extract additional prosody of the speech information, and ... said speech synthesis module is arranged to take into account the prosody of speech information in speech synthesis” (See, Office Action, page 4.) However, Applicants disagree with Examiner’s broad assertion that “it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Zoels in view of Leonhard by specifically providing the features, as taught by Boss, since it is well known in the art for the purpose of improving the quality of the synthesized speech for hearing impaired individuals.” (See, Office Action, page 5.)

17. There is no suggestion in the art of record that there is a need to incorporate the use of prosodic parameters into Leonhard and Zoels because, as noted by the Examiner, Zoels discloses a system that “performs signal analysis, recognition and synthesis.” (See, Office Action, page 4; Leonhard col. 2, lns. 56-60.) Therefore, because Leonhard has means to “obtain distinct features within auditory signals by examining the transformed low frequency signals,” there is no need to incorporate the prosodic extraction and use means disclosed in Boss to improve the quality of the sound. Therefore, for at least this reason Applicants assert that the rejection under section 103 was improper and should be withdrawn.

The Proposed Combination Lacks Elements of Applicants’ Claim 1

18. For reasons noted above, the Examiner has used impermissible hindsight to explain why one of ordinary skill in the art would be motivated to modify Zoels in view of Tibbetts, in further view of Leonhard and Boss. Furthermore, even if the references were combined as suggested by the Examiner, the resulting combination would not contain all elements of the claimed invention.

19. In the rejection under 35 U.S.C. 103(a) the Examiner states that Zoels teaches an “an actuator arrangement configured to provide output stimulation and ...comprising at least dual output stimulators, wherein said output stimulators are at least one extracochlear electroacoustic, electromechanical, or purely electric stimulator, and at least an additional electroacoustic, electromechanical, or purely electric stimulator.” (See, Applicants’ claim 1, above; Office Action, page 3.) However, Zoels is directed to purely electroacoustic stimulation. In fact, Zoels completely fails to teach or suggest any type of output

stimulation that it is not purely electroacoustic. (*See*, Zoels, claims, col. 2, lns. 1-35.) Similarly, neither Tibbetts nor the other art of record teach or suggest “an actuator arrangement configured to provide output stimulation by any combination of electroacoustic, electromechanical, or purely electric stimulation based on the electrical audio signal processed in said electronic signal processing unit” as recited in Applicants’ claim 1. In fact, only Tibbetts is directed towards electroacoustic output stimulation while the remaining art of record fails to disclose any type of output stimulation. Therefore, Applicants respectfully submit that the combination proposed by the Examiner was improper for at least the reason that the combination fails to teach or suggest the above recited element of Applicants’ claim 1. Thus, Applicants respectfully submit that the rejection under section 103 was improper and should be withdrawn.

20. Furthermore, as noted above, the Examiner acknowledges that Zoels fails to teach or suggest Applicants’ claim 1 because Zoels does not disclose “an electronic signal processing unit configured to process and amplify said electrical audio signal, ... and a speech synthesis module configured to facilitate the transmission of speech information in a noisy environment.” (*See*, Applicants’ claim 1, above; Office Action, page 4.) However, the Examiner’s assertion that “these features were well known in the art, as taught by Leonhard” is incorrect. (*See*, Office Action, page 4.) It was improper for the Examiner to rely upon Leonhard to teach this element of Applicants’ claim 1 because, also as acknowledged by the Examiner, the processor disclosed in Leonhard fails to teach or suggest a processor “wherein said speech analysis and recognition module are arranged to detect and extract additional prosody of the speech information, and ... wherein said speech synthesis module is arranged to take into account the prosody of speech information in speech synthesis.” (*See*, Applicants’ claim 1, above.)

21. As evidence that Leonhard does not teach the claimed element recited above, Applicants point to the fact that Examiner relied upon another reference, Boss, to disclose the use of prosodic information in signal processing. (*See*, Office Action, page 4; Boss, Abstract, col. 3, lines 1-19.) Therefore, Applicants submit that Leonhard does not disclose “an electronic signal processing unit configured to process and amplify said electrical audio signal, ... and a speech synthesis module configured to facilitate the transmission of speech information in a noisy environment” and these elements are not “well known in the art,” as asserted by the Examiner. (*See*, Office Action, page 4.) Therefore, for at least this

reason, Applicants submit that the rejection under section 103 was improper and should be withdrawn.

22. Furthermore, Boss or the other art of record fail to teach or suggest that which is missing from Zoels and Leonhard. In Boss, a "speech analyzer identifies each of the speech of the speech segments in the received digitalized speech signal... [and] speech analyzer outputs each of the digitalized speech segments." (*See*, Boss, col. 3, lns. 2-6.) "A plurality of prosodic parameter detectors, including a pitch detector, a duration detector, and an amplitude detector, are each coupled to memory and speech analyzer." (*See*, Boss, col. 4, lns. 1-13.) Thus, Boss discloses a system that uses a separate speech analyzer and prosodic parameter detectors that are completely separate from the speech analyzer. However, Applicants' claim 1 recites, in part, "a speech analysis and recognition module, wherein said speech analysis and recognition module are arranged to detect and extract additional prosody of the speech information." Thus, because Boss fails to teach or suggest a single module "arranged to detect and extract additional prosody of the speech information," as recited in Applicants' claim 1, Boss fails to teaches or suggest that which the Examiner asserts. Therefore, because the art of record fails to teach or suggest all elements of the claimed invention, Applicants assert for at least this reason the rejection under section 103 was improper and should be withdrawn.

23. Therefore, the Examiner has failed to demonstrate any teaching, suggestion, incentive, or inference in the references, or in the form of generally available knowledge, that one of ordinary skill in the art would have been led to modify the teachings of Zoels in the proposed manner. Thus, the only conclusion that can reached, based on the record of this application, is that the suggestion forming the basis for the Examiner's otherwise factually unsupported conclusion must have come from Applicants' own novel disclosure; that is, they are based on impermissible hindsight. For at least these reasons, Applicants respectfully request that the rejection under Section 103 of the independent claim be reconsidered and withdrawn.

Dependent Claims

24. The dependent claims incorporate all of the subject matter of their respective independent claims and add additional subject matter, which makes them a fortiori and independently patentable over the art of record. Accordingly, Applicants respectfully

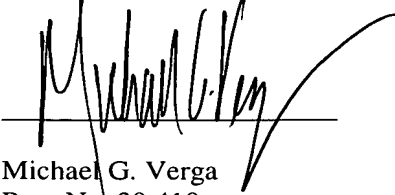
request that the outstanding rejections of the dependent claims be reconsidered and withdrawn.

Conclusion

25. In view of the foregoing, this application should be in condition for allowance.

A notice to this effect is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael G. Verga", is written over a horizontal line.

Michael G. Verga
Reg. No. 39,410
Tel. (703) 563-2005

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